

SEQUENCE LISTING

<110> Wood, Keith V.
 Los, Georgyi V.
 Bulleit, Robert F.
 Klaubert, Dieter
 McDougall, Mark
 Zimprich, Chad
 Promega Corporation

<120> Covalent Tethering of Functional Groups to Proteins

<130> 341.020US1

<150> US 60/444,094
 <151> 2003-01-31

<150> US 60/474,659
 <151> 2003-05-30

<160> 64

<170> FastSEQ for Windows Version 4.0

<210> 1
 <211> 31
 <212> DNA
 <213> Rhodococcus rhodochrous

<400> 1
 gcttcacttg tcgtcatcgt ccttgtagtc a 31

<210> 2
 <211> 31
 <212> DNA
 <213> Rhodococcus rhodochrous

<400> 2
 gcttcacttg tcgtcatcgt ccttgtagtc a 31

<210> 3
 <211> 27
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> A synthetic primer

<400> 3
 ccgggattgt tctacctcca ggaagac 27

<210> 4
 <211> 27
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> A synthetic primer

<400> 4
 ccgggattgg cctacctcca ggaagac 27

<210> 5
 <211> 27
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> A synthetic primer

 <400> 5
 ccgggattgc agtacctcca ggaagac 27

 <210> 6
 <211> 27
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> A synthetic primer

 <400> 6
 ccgggattgg gctacctcca ggaagac 27

 <210> 7
 <211> 37
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> A synthetic primer

 <400> 7
 acgcgtcgac gccgccatgt cagaaatcgg tacaggc 37

 <210> 8
 <211> 55
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> A synthetic primer

 <400> 8
 ataagaatgc ggccgctcaa gcgcttcaac cggtgagtgc ggggagccag cgcgc 55

 <210> 9
 <211> 35
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> A synthetic oligonucleotide

 <400> 9
 ccggtgacta caaggacgat gacgacaagt gaagc 35

 <210> 10
 <211> 31
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> A synthetic oligonucleotide

<400> 10
 gcttcacttg tcgtcatcgt ccttgtagtc a 31

 <210> 11
 <211> 31
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> A synthetic primer

 <400> 11
 gcttcacttg tcgtcatcgt ccttgtagtc a 31

 <210> 12
 <211> 31
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> A synthetic primer

 <400> 12
 gcttcacttg tcgtcatcgt ccttgtagtc a 31

 <210> 13
 <211> 43
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> A synthetic primer

 <400> 13
 cttgggtttg gaagaggtcg tcctgggtcat ccactgctgg ggc 43

 <210> 14
 <211> 42
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> A synthetic primer

 <400> 14
 tgagccccag cagtggatga ccaggacgac ctcttccaaa cc 42

 <210> 15
 <211> 29
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> A synthetic primer

 <400> 15
 ggaatggggc ctctagagcg acgatgtca 29

 <210> 16
 <211> 26
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> A synthetic primer

<400> 16
 cagtcagtca cgatggatcc gctcaa

<210> 17

<400> 17
 000

<210> 18

<400> 18
 000

<210> 19
 <211> 5
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> A synthetic affinity molecule

<400> 19
 His His His His His
 1 5

<210> 20
 <211> 6
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> A synthetic affinity molecule

<400> 20
 His His His His His His
 1 5

<210> 21
 <211> 10
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> A synthetic affinity molecule

<400> 21
 Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu
 1 5 10

<210> 22
 <211> 8
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> A synthetic affinity molecule

<400> 22
Asp Tyr Lys Asp Asp Asp Asp Lys
1 5

<210> 23
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> A synthetic affinity molecule

<400> 23
Trp Ser His Pro Gln Phe Glu Lys
1 5

<210> 24
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> A synthetic affinity molecule

<400> 24
Tyr Pro Tyr Asp Val Pro Asp Tyr Ala
1 5

<210> 25

<400> 25
000

<210> 26
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> A synthetic oligonucleotide

<400> 26
atcgaaggtc gtgggatccc caggaattcc cgggtcgacg ccgcc

45

<210> 27
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> A synthetic peptide

<400> 27
Ile Glu Gly Arg Gly Ile Pro Arg Asn Ser Arg Val Asp Ala Ala
1 5 10 15

<210> 28
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
 <223> A synthetic oligonucleotide

 <400> 28
 tccggatcaa gcttgggcga cgaggtggac ggcgggcct ctagagccac c 51

 <210> 29
 <211> 17
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> A synthetic peptide

 <400> 29
 Ser Gly Ser Ser Leu Gly Asp Glu Val Asp Gly Gly Pro Ser Arg Ala
 1 5 10 15
 Thr

 <210> 30
 <211> 45
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> A synthetic oligonucleotide

 <400> 30
 accggttcg gatcaagctt gcggtaccgc gggccctcta gagcc 45

 <210> 31
 <211> 15
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> A synthetic peptide

 <400> 31
 Thr Gly Ser Gly Ser Ser Leu Arg Tyr Arg Gly Pro Ser Arg Ala
 1 5 10 15

 <210> 32
 <211> 51
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> A synthetic oligonucleotide

 <400> 32
 tccggatcaa gcttgcgcta ccgcgggccc tctagagccg tcgacgccgc c 51

 <210> 33
 <211> 17
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> A synthetic peptide

<400> 33
 Ser Gly Ser Ser Leu Arg Tyr Arg Gly Pro Ser Arg Ala Val Asp Ala
 1 5 10 15
 Ala

<210> 34
 <211> 43
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> A synthetic oligonucleotide

<400> 34
 cttggggtttg gaagaggtcg tcctggtcat ccaccagtgg ggc 43

<210> 35
 <211> 42
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> A synthetic oligonucleotide

<400> 35
 tgagccccac tgggtggatga ccaggacgac ctcttccaaa cc 42

<210> 36
 <211> 1053
 <212> DNA
 <213> Staphylococcus aureus

<400> 36
 agcttactat gccattatta ataacttagc catttcaaca ccttctttca aatattttata 60
 ataaactatt gacaccgata ttacaattgt aatattattg atttataaaa attacaactg 120
 taatatcgga ggggtttattt tgaaaaagtt aatattttta attgtaattg ctttagtttt 180
 aagtgcattg aattcaaaca gttcacatgc caaagagtta aatgatttag aaaaaaata 240
 taatgctcat attgggtgttt atgctttaga tactaaaagt ggtaagggaag taaaatttaa 300
 ttcagataag agatttgcct atgcttcaac ttcaaaagcg ataaatagtg ctattttgtt 360
 agaacaagta ccttataata agttaaataa aaaagtacat attaacaag atgatatagt 420
 tgcttattct cctatttttag aaaaatatgt aggaaaagat atcactttta aagcacttat 480
 tgaggcttca atgacatata gtgataatac agcaaacaat aaaattataa aagaaatcgg 540
 tggaatcaaa aaagttaaac aacgtctaaa agaactagga gataaagtaa caaatccagt 600
 tagatatgag atagaattaa attactattc accaaagagc aaaaaagata cttcaacacc 660
 tgctgccttc ggtaagacc ttaataaaact tatcgccaat ggaaaattaa gcaaagaaaa 720
 caaaaaattc ttacttgatt taatgttaaa taataaaagc ggagatactt taattaaaga 780
 cggtgttcca aaagactata aggttgctga taaaagtggg caagcaataa catatgcttc 840
 tagaaatgat gttgcttttg tttatcctaa gggccaatct gaacctattg ttttagtcat 900
 ttttacgaat aaagacaata aaagtgataa gccaaatgat aagttgataa gtgaaaccgc 960
 caagagtgtg atgaaggaat tttaatattc taaatgcata ataaatactg ataacatctt 1020
 atattttgtg ttatattttg tattatcggt gac 1053

<210> 37
 <211> 81
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> A synthetic oligonucleotide

<400> 37
 ccggtgatcc aaaaaagaag agaaaggtag atccaaaaaa gaagagaaag gtagatccaa 60
 aaaagaagag aaaggtatga g 81

<210> 38
 <211> 81
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> A synthetic oligonucleotide

<400> 38
 gatcctcata cttttctctt cttttttgga tctacctttc tcttcttttt tggatctacc 60
 tttctcttct tttttggatc a 81

<210> 39
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> A synthetic oligonucleotide

<400> 39
 attatgctga gtgatatccc 20

<210> 40
 <211> 25
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> A synthetic oligonucleotide

<400> 40
 ctcggtacca agtccttgt agtca 25

<210> 41
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> A synthetic oligonucleotide

<400> 41
 caaaggtatt gcatgtatgc agttcatccg gcctatcccg 40

<210> 42
 <211> 44
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> A synthetic oligonucleotide

<400> 42
 gtcaaaggta ttgcatgtat gctgttcac cggcctatcc cgac 44

<210> 43
 <211> 36
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> A synthetic oligonucleotide

 <400> 43
 aggtattgca tgtatggcgt tcatccggcc tatccc 36

 <210> 44
 <211> 23
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> A synthetic primer

 <400> 44
 gggctggcaa gccacgtttg gtg 23

 <210> 45
 <211> 10
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> A synthetic improved Kozak sequence

 <400> 45
 gccaccatgg 10

 <210> 46
 <211> 36
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> A synthetic oligonucleotide

 <220>
 <221> misc_feature
 <222> 1-36
 <223> n = A, T, G, or C

 <400> 46
 nnnngctagc cagctggcga tatcgccacc atggga 36

 <210> 47
 <211> 30
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> A synthetic oligonucleotide

 <220>
 <221> misc_feature
 <222> 1-34
 <223> n = A, T, G, or C

<400> 47
taatagttaa ttaagtaagc ggccgcnnnn

30

<210> 48
<211> 296
<212> PRT
<213> Artificial Sequence

<220>
<223> A synthetic peptide

<400> 48
Met Gly Ser Glu Ile Gly Thr Gly Phe Pro Phe Asp Pro His Tyr Val
1 5 10 15
Glu Val Leu Gly Glu Arg Met His Tyr Val Asp Val Gly Pro Arg Asp
20 25 30
Gly Thr Pro Val Leu Phe Leu His Gly Asn Pro Thr Ser Ser Tyr Leu
35 40 45
Trp Arg Asn Ile Ile Pro His Val Ala Pro Ser His Arg Cys Ile Ala
50 55 60
Pro Asp Leu Ile Gly Met Gly Lys Ser Asp Lys Pro Asp Leu Asp Tyr
65 70 75 80
Phe Phe Asp Asp His Val Arg Tyr Leu Asp Ala Phe Ile Glu Ala Leu
85 90 95
Gly Leu Glu Glu Val Val Leu Val Ile His Asp Trp Gly Ser Ala Leu
100 105 110
Gly Phe His Trp Ala Lys Arg Asn Pro Glu Arg Val Lys Gly Ile Ala
115 120 125
Cys Met Glu Phe Ile Arg Pro Ile Pro Thr Trp Asp Glu Trp Pro Glu
130 135 140
Phe Ala Arg Glu Thr Phe Gln Ala Phe Arg Thr Ala Asp Val Gly Arg
145 150 155 160
Glu Leu Ile Ile Asp Gln Asn Ala Phe Ile Glu Gly Ala Leu Pro Lys
165 170 175
Cys Val Val Arg Pro Leu Thr Glu Val Glu Met Asp His Tyr Arg Glu
180 185 190
Pro Phe Leu Lys Pro Val Asp Arg Glu Pro Leu Trp Arg Phe Pro Asn
195 200 205
Glu Leu Pro Ile Ala Gly Glu Pro Ala Asn Ile Val Ala Leu Val Glu
210 215 220
Ala Tyr Met Asn Trp Leu His Gln Ser Pro Val Pro Lys Leu Leu Phe
225 230 235 240
Trp Gly Thr Pro Gly Val Leu Ile Pro Pro Ala Glu Ala Ala Arg Leu
245 250 255
Ala Glu Ser Leu Pro Asn Cys Lys Thr Val Asp Ile Gly Pro Gly Leu
260 265 270
Phe Tyr Leu Gln Glu Asp Asn Pro Asp Leu Ile Gly Ser Glu Ile Ala
275 280 285
Arg Trp Leu Pro Gly Leu Ala Gly
290 295

<210> 49
<211> 948
<212> DNA
<213> Artificial Sequence

<220>
<223> A synthetic oligonucleotide

```

<220>
<221> misc_feature
<222> 1-948
<223> n = A, C, T, or G

<400> 49
nnnngctagc cagctggcga tatcgccacc atgggatccg agattgggac aggggttccct      60
tttgatcctc attatgtgga ggtgctgggg gagagaatgc attatgtgga tgtggggcct      120
agagatggga cacctgtgct gtttctgcat gggaaacctc catcttctta tctgtggaga      180
aatattatct ctcattgtggc tccttctcat agatgtattg ctcctgatct gattgggatg      240
gggaagtctg ataagcctga tctggattat ttttttgatg atcatgtgag atatctggat      300
gcttttattg aggcctctggg gctggaggag gtggtgctgg tgattcatga ttgggggtct      360
gctctggggt ttcattgggc taagagaaat cctgagagag tgaaggggat tgcttgatg      420
gagtttatta gacctattcc tacatgggat gagtggcctg agtttgctag agagacattt      480
caggctttta gaacagctga tgtggggaga gagctgatta ttgatcagaa tgcttttatt      540
gagggggctc tgcctaagtg tgtggtgaga cctctgacag aggtggagat ggatcattat      600
agagagcctt ttctgaagcc tgtggataga gagcctctgt ggagatttcc taatgagctg      660
cctattgctg gggagcctgc taatattgtg gctctggtgg aggcctatat gaattggctg      720
catcagtctc ctgtgcctaa gctgctgttt tgggggacac ctggggtgct gattcctcct      780
gctgaggctg ctagactggc tgagtctctg cctaattgta agacagtgga tattgggcct      840
gggctgtttt atctgcagga ggataatcct gatctgattg ggtctgagat tgctagatgg      900
ctgccggggc tggccgggcta atagttaatt aagtaagcgg ccgcnnnn      948

```

```

<210> 50
<211> 951
<212> DNA
<213> Artificial Sequence

```

```

<220>
<223> A synthetic oligonucleotide

```

```

<220>
<221> misc_feature
<222> 1-951
<223> n = A, T, G, or C

```

```

<400> 50
nnnngctagc cagctggcgc ggatatcgcc accatgggat ccgagattgg gacaggggttc      60
ccttttgatc ctactatgt tgaagtgtcg ggggaaagaa tgcactacgt ggatgtgggg      120
cctagagatg ggacccagct gctgttctc caccgggaacc ctacatctag ctacctgtgg      180
agaaatatta tacctcatgt tgctcctagt cataggtgca ttgctcctga tctgatcggg      240
atggggaagt ctgataagcc tgacttagac tacttttttg atgatcatgt tcgatacttg      300
gatgctttca ttgaggctct ggggctggag gaggtggtgc tggatgatac cgactggggg      360
tctgctctgg ggtttcactg ggctaaaagg aatccggaga gagtgaaggg gattgcttgc      420
atggagttta ttcgacctat tcctacttgg gatgaatggc cagagtttgc cagagagaca      480
tttcaagcct ttagaactgc cgatgtgggc agggagctga ttatagacca gaatgctttc      540
atcgaggggg ctctgcctaa atgtgtagtc agacctctca ctgaagtaga gatggaccat      600
tatagagagc cttttctgaa gcctgtggat cgcgagcctc tgtggagggt tccaaatgag      660
ctgcctattg ctggggagcc tgctaattat gtggtctctg tggaaagccta tatgaactgg      720
ctgcatcaga gtccagtgcc caagctactc ttttggggga ctccgggagt tctgattcct      780
cctgccgagg ctgctagact ggctgaatcc ctgccaatt gtaagaccgt ggacatcggc      840
cctgggctgt tttacctcca agaggacaac cctgatctca tcgggtctga gatcgcacgg      900
tggctgcccg ggctggccgg ctaatagtta attaagtagg cggccgcnnn n      951

```

```

<210> 51
<211> 882
<212> DNA
<213> Rhodococcus rhodochrous

```

```

<400> 51
atgtcagaaa tcggtacagg cttcccttcc gaccccccatt atgtggaagt cctgggcgag      60
cgtatgcact acgtcgatgt tggaccgcgg gatggcacgc ctgtgctgtt cctgcacggt      120

```

aacccgacct	cgctctacct	gtggcgcaac	atcatcccg	atgtagcacc	gagtcacgg	180
tgcattgctc	cagacctgat	cgggatggga	aaatcggaca	aaccagacct	cgattatttc	240
ttcgacgacc	acgtccgcta	cctcgatgcc	ttcatcgaag	ccttgggttt	ggaagaggtc	300
gtcctgggtca	tccacgactg	gggctcagct	ctcgattcc	actgggcca	gcgcaatccg	360
gaacgggtca	aagggtattgc	atgtatggaa	ttcatccggc	ctatcccgac	gtgggacgaa	420
tggccggaat	tcgcccgtga	gaccttccag	gccttccgga	ccgccgacgt	cggccgagag	480
ttgatcatcg	atcagaacgc	tttcatcgag	gggtgcgtcc	cgaaatgcgt	cgtccgtccg	540
cttacggagg	tcgagatgga	ccactatcgc	gagcccttcc	tcaagcctgt	tgaccgagag	600
ccactgtggc	gattccccaa	cgagctgccc	atcgccgggtg	agcccgcgaa	catcgtcgcg	660
ctcgtcgagg	catacatgaa	ctggctgcac	cagtcacctg	tcccgaagtt	gttgttctgg	720
ggcacacccg	gcgtactgat	ccccccggcc	gaagccgcga	gacttgccga	aagcctcccc	780
aactgcaaga	cagtggacat	cggcccggga	ttgcactacc	tccaggaaga	caaccgggac	840
cttatcggca	gtgagatcgc	gcgctggctc	cccgcactct	ag		882

<210> 52
 <211> 43
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> A synthetic oligonucleotide

<400> 52	
cttggggtttg	gaagaggtcg tcttggtcat ccacgaatgg ggc
	43

<210> 53
 <211> 42
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> A synthetic oligonucleotide

<400> 53	
tgagcccat	tcgtggatga ccaggacgac ctcttccaaa cc
	42

<210> 54
 <211> 43
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> A synthetic oligonucleotide

<400> 54	
cttggggtttg	gaagaggtcg tcttggtcat ccactactgg ggc
	43

<210> 55
 <211> 42
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> A synthetic oligonucleotide

<400> 55	
tgagccccag	tagtggatga ccaggacgac ctcttccaaa cc
	42

<210> 56
 <211> 38
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> A synthetic primer

 <400> 56
 ccagttagat atgacataga attaaattac tattcacc 38

 <210> 57
 <211> 38
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> A synthetic primer

 <400> 57
 ggtgaatagt aatttaattc tatgtcatat ctaactgg 38

 <210> 58
 <211> 38
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> A synthetic primer

 <400> 58
 ccagttagat atgagataga attacagtac tattcacc 38

 <210> 59
 <211> 38
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> A synthetic primer

 <400> 59
 ggtgaatagt actgtaattc tatctcatat ctaactgg 38

 <210> 60
 <211> 38
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> A synthetic primer

 <400> 60
 ccagttagat atgacataga attacagtac tattcacc 38

 <210> 61
 <211> 38
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> A synthetic primer

 <400> 61
 ggtgaatagt actgtaattc tatgtcatat ctaactgg 38

<210> 62
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> A synthetic primer

<400> 62
caacaggctcg acgccgccat gaaagagtta aatgatttag

40

<210> 63
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> A synthetic primer

<400> 63
gtagtcaccg gttaaattcct tcattacact cttggc

36

<210> 64
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> A synthetic peptide

<400> 64
Asp Glu Val Asp
1